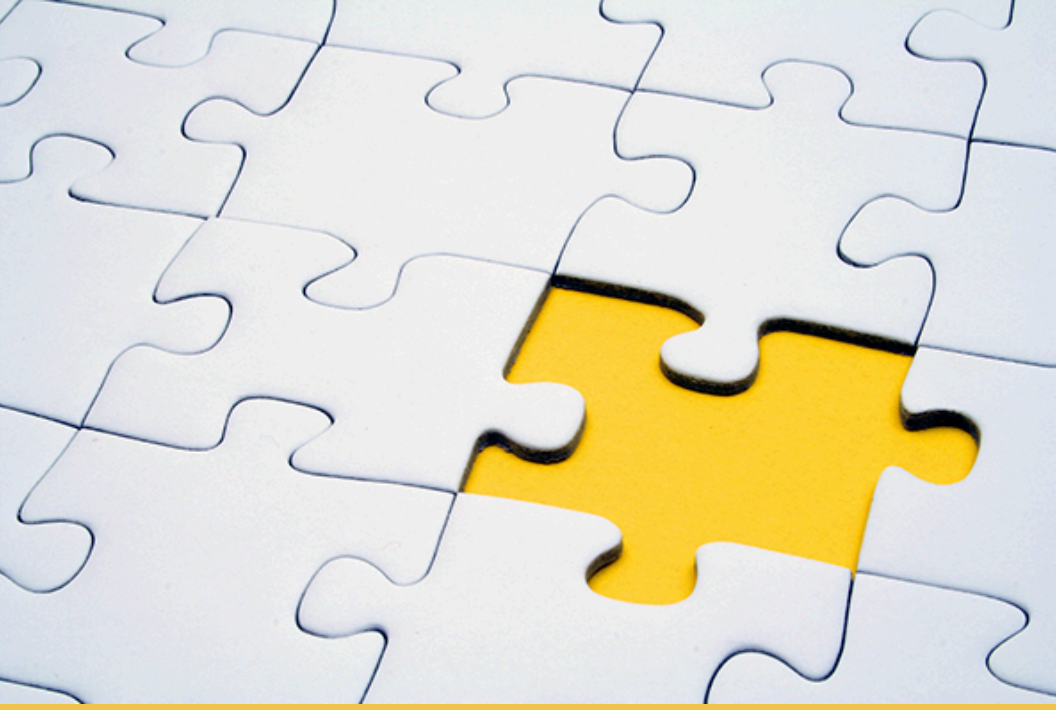


4th

Industrial Revolution

Learn with us

By **Ahmad Manzoor**

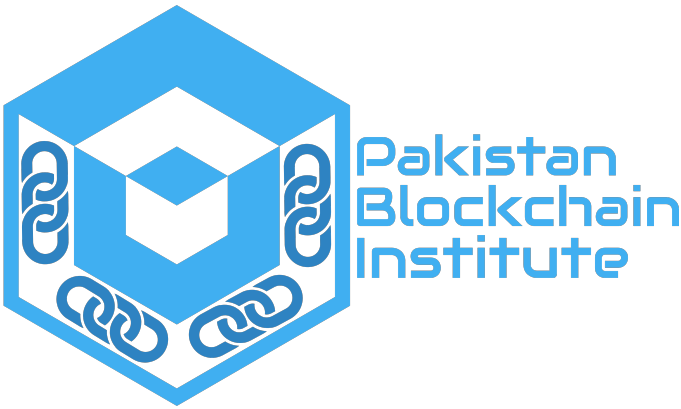
4th Industrial Revolution

Learn all what you need to know about 4th IR

By **Ahmad Manzoor**

We prepare this short booklet for all the new learners who want to learn about 4th Industrial Revolution's basics.

Ahmad Manzoor
Founder & CEO
Pakistan Blockchain Institute
www.pakistanblockchaininstitute.org



Prologue

This is a short manual to understand the 4th Industrial Revolution Technologies in very easy & understandable language.

This is Prepared this for beginners to give them a feeler about new upcoming technologies and how these technologies will change the world.

Table of Content

What is Technology?

In simple words technology is the sum of techniques, skills, methods, and processes used in the production of goods or services or in the accomplishment of objectives, such as scientific investigation. Technology can be the knowledge of techniques, processes, and the like, or it can be embedded in machines to allow for operation without detailed knowledge of their workings. Systems (e.g. machines) applying technology by taking an input, changing it according to the system's use, and then

producing an outcome are referred to as **technology systems** or **technological systems**.

Whether it's practical (like washing machines, tumble dryers, refrigerators, cars, flooring materials, windows, or door handles) or for leisure (like televisions, Blu-ray players, games consoles, reclining chairs, or toys), all these things are **examples of technology**.

*"It has become appallingly obvious that our **technology** has exceeded our humanity"*

What is SMART?

SMART is stand for "Self-Monitoring Analysis And Reporting Technology", it enhances accuracy & efficiency of the system.

SMART is based on multiple technologies like:

Sensors, databases, and wireless access to collaboratively sense, adapt, and provide for users within the environment.

Types of SMART Architecture Projects

Following are few project based on SMART Technologies:

- Smart Buildings & Homes
- Industry 4.0
- Smart wastage system
- Smart sewerage System
- Smart lighting
- Smart grids
- Smart parking systems
- Smart health care
- Smart transportation
- Smart Roads
- Smart Traffic Management
- Smart Governance
- Smart Security systems
- Smart Response systems
- Smart Education systems
- Smart Factories
- Smart Energy Systems / devices
- Smart liveability
- Smart Devices & Things

etc.....

Why we need SMART Architectures?

Following are few benefits of SMART Architectures, from these you will understand why we need SMART Architectures:

- More effective, data-driven decision-making
- Enhanced citizen and government engagement
- Safer communities
- Reduced environmental footprint
- Improved transportation
- Increased digital equity
- New economic development opportunities
- Efficient public utilities
- Improved infrastructure
- Increased workforce engagement

What is Digital Transformation?

Digital Transformation is the adoption of digital technology to transform services or businesses, through replacing non-digital or manual processes with digital processes or replacing older digital technology with newer digital technology.

Digital Transformation is not about automation, this more related to the liveability and make the liveability more easier through user experience (UX) & user interface (UI).One example is our mobile phone, like before SMART

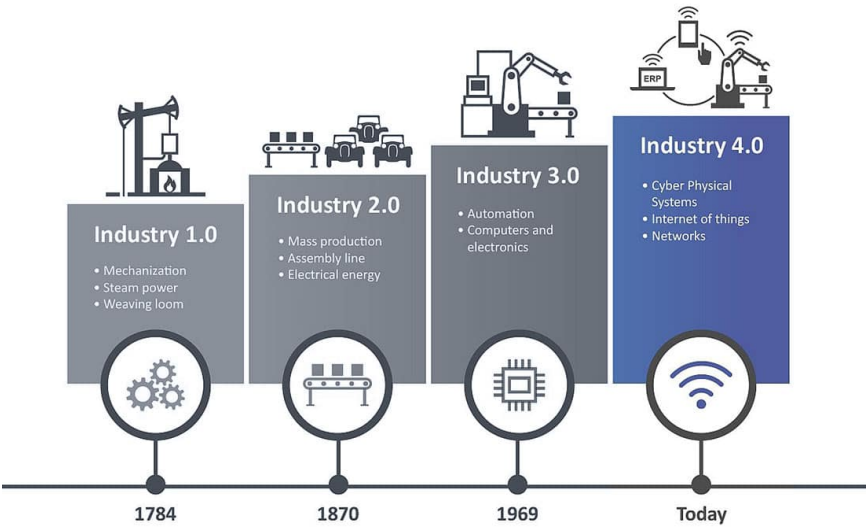
mobile phones we have used everything physically, now our SMART phone is our office, from emails to phone calls.

With digital transformation we make our lives easier and more effective.

Digital Transformation is the use of new, fast and frequently changing digital technology to solve problems often utilising cloud computing, reducing reliance on user owned hardware but increasing reliance on subscription based cloud services.

4th Industrial Revolution (4IR)

Fourth Industrial Revolution (4IR)—characterized by the fusion of the digital, biological, and physical worlds, as well as the growing utilization of new technologies such as artificial intelligence, blockchain,



Different Eras of Industrial Revolutions

cloud computing, robotics, 3D printing, internet of Things, internet of everything and advanced wireless technologies like 5G, among others.

Components of 4th Industrial Revolution

Fourth Industrial Revolution (4IR) is based on many technology or you can say combination of different technologies like following:

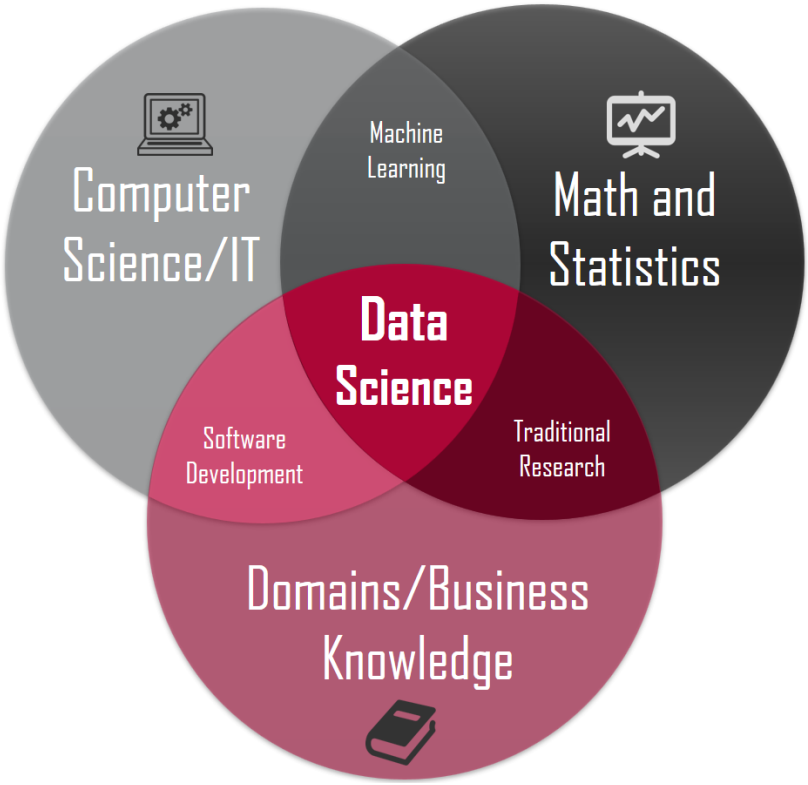
- Data Sciences
- Cloud Computing
- Internet of things
- Internet of everything
- Artificial Intelligence
- Blockchain
- 5G

Why it's important to learn about these Technologies?

As mentioned above 4IR is combination of multiple technologies, so it's important to understand the impact of these technologies in upcoming world / near future. These emerging technologies will change the world rapidly, you can say next 10 - 15 years are very crucial for tech industry.

Data Sciences

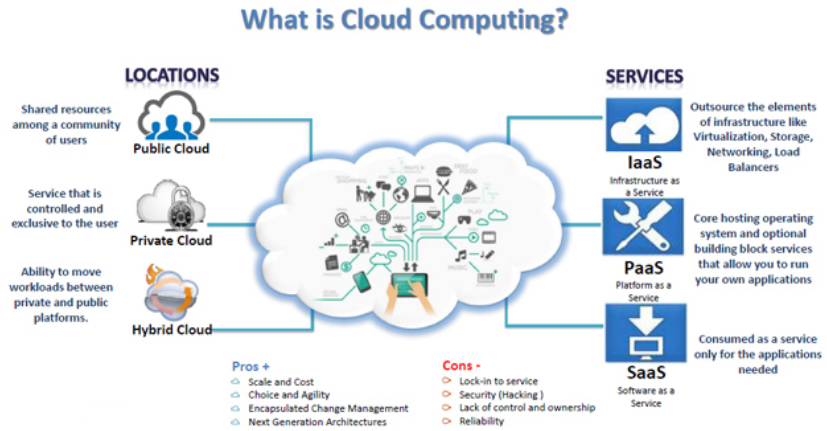
Data science is an inter-disciplinary field that uses scientific methods, processes, algorithms and systems to extract



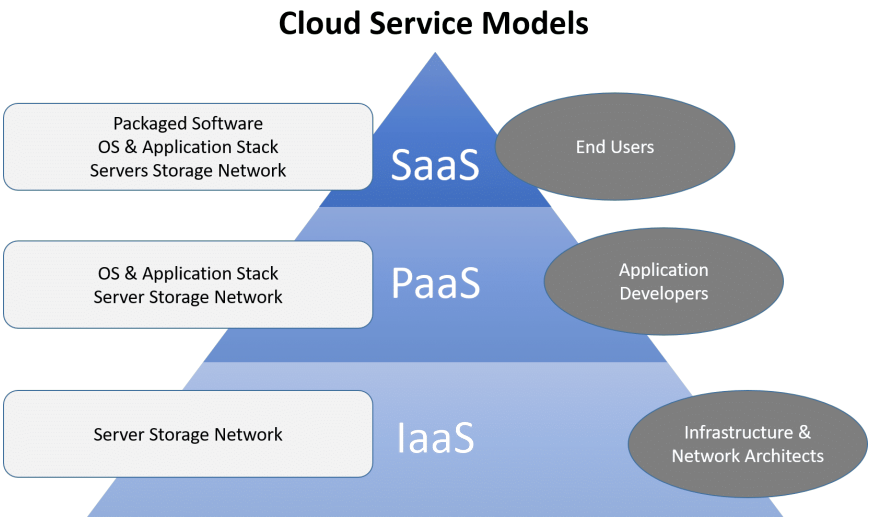
knowledge and insights from many structural and unstructured data. Data science is related to data mining, machine learning and big data.

Cloud Computing

Cloud computing is the on-demand availability of computer system resources, especially data storage and computing



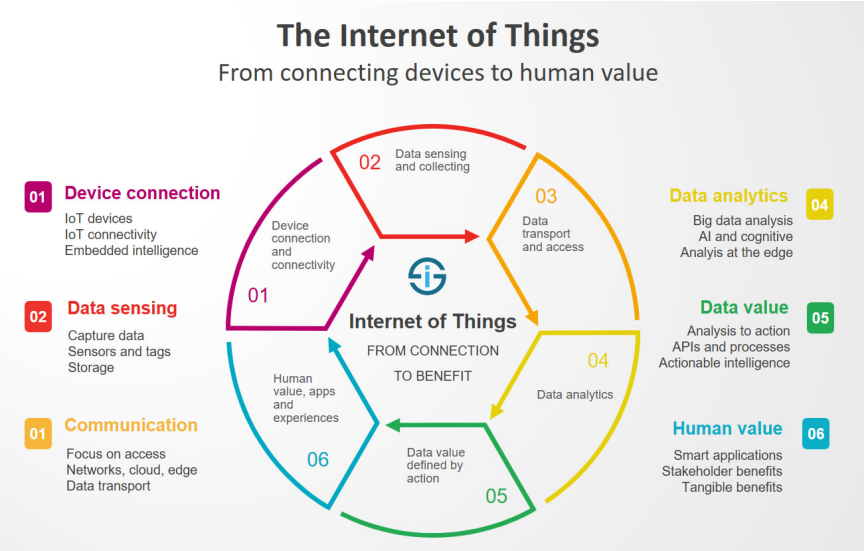
power, without direct active management by the user. The term is generally used to describe data centers available to many users over the Internet.



Internet of Things

The Internet of Things is basically adopted to make things communicate with humans through network. Additionally it will make the network of physical “things”.

These devices will communicate through sensors, software, and other technologies for the purpose of connecting and



exchanging data over the internet.

IOT = Network + Things

Visit the following link:

https://builtin.com/internet-things/iot-examples

Internet of EveryThing

The Internet of Everything (IoE) is a concept that aims to look at the bigger picture in which the Internet of Things fits. Yet, when you look deeper at IoE, you'll notice it really is also about the vision of a distributed network with a growing focus on the edge in times of ongoing decentralization, some digital transformation enablers and a focus on IoT business outcomes.

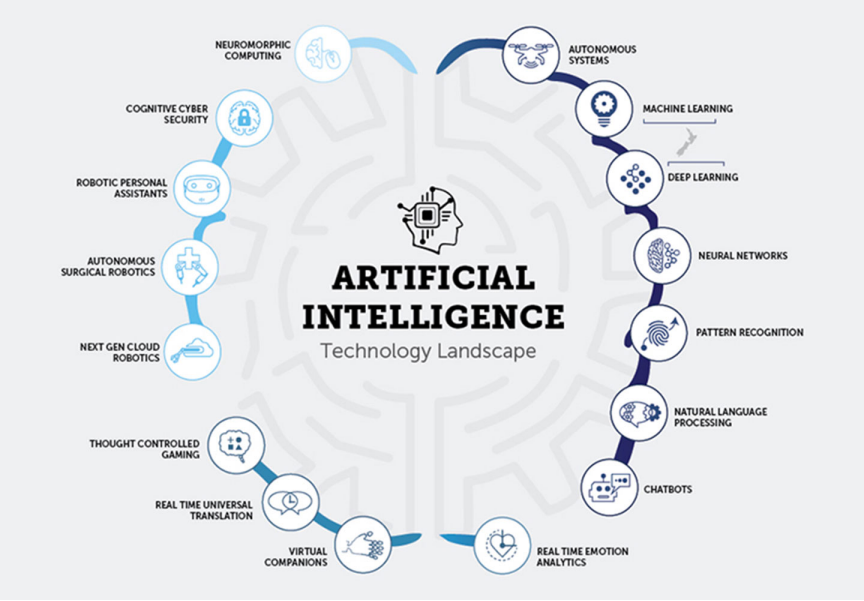
Internet of Everything (IoE) brings together people, process, data, and things to make networked connections more relevant and valuable.

IOE = Network + Things + People + Data + Process

Artificial Intelligence

Artificial intelligence, sometimes also called machine intelligence, is intelligence demonstrated by machines, unlike the natural intelligence displayed by humans and animals.

This technology will make the machine to learn and predict like we are using in few field mentioned in below section:



Use-Cases of Artificial Intelligence

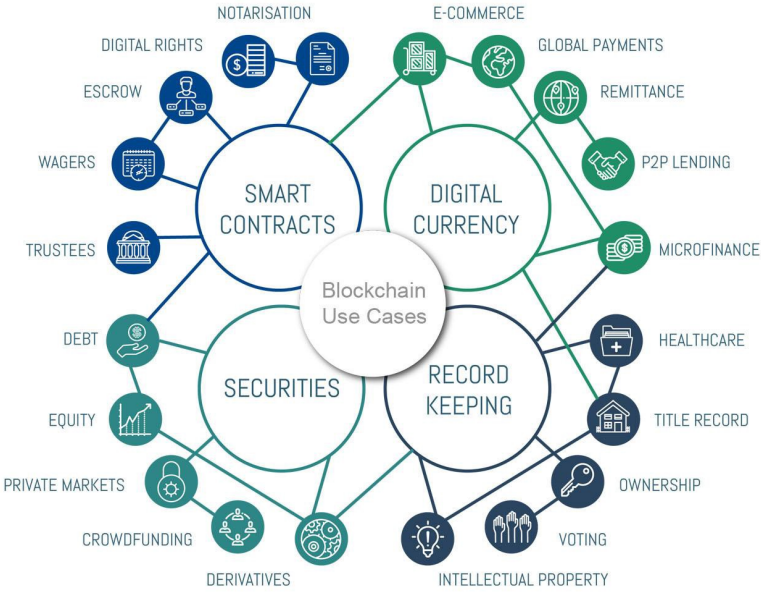
Following are few use-cases related to artificial intelligence

- Manufacturing robots.
- Smart assistants.
- Proactive healthcare management.
- Disease mapping,.
- Automated financial investing.
- Virtual travel booking agent.
- Social media monitoring.
- Inter-team chat tool.
- Prediction Assistants

Blockchain

Blockchain is hottest topic these days, which always get the false expression and mixed up with Bitcoin or Crypto Currencies. Following are few myths and misconceptions about Blockchain Technology:

- Blockchain = Bitcoin
- Blockchain can only be used for financial sector



- Everyone can see private information on the Blockchain as Blockchain is only public

- Smart Contracts have the same legal value as regular contracts

Blockchain is also called new internet, it will work simultaneously like internet and every other technology will change with time, but blockchain remain there like internet.

Blockchain is an immutable record keeping system not working over CRUD functionality.

C- Create
R- Read
U- Update
D- Delete

Update & Delete functionalities removed from system intentionally to make this system immutable, transparent & more accurate.You can only create or read the record.

Blockchain Use-Cases

Following are few use-cases about Blockchain technology

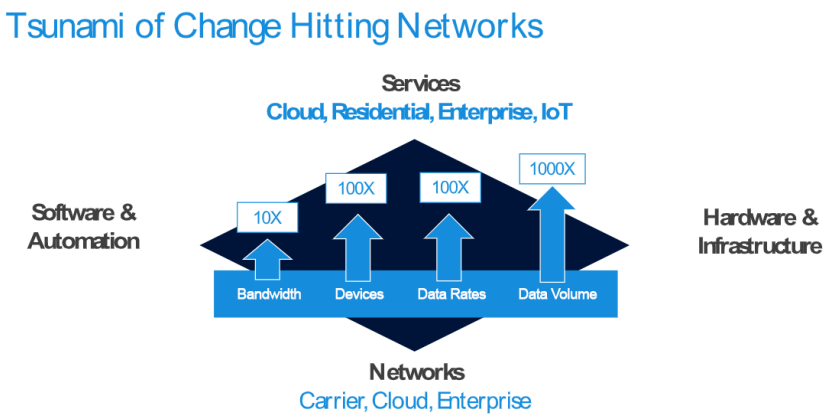
Visit the following link:

https://www.forbes.com/sites/bernardmarr/2018/05/14/30-real-examples-of-blockchain-technology-in-practice/#1e0da949740d

5G

5G is the 5th generation mobile network. It is a new global wireless standard after 1G, 2G, 3G, and 4G networks. 5G enables a new kind of network that is designed to connect virtually everyone and everything together including machines, objects, and devices.

- 5G is a combination of extraordinary advances in the physics of the radio network



- The advancements and the agility and flexibility in networking
- NFV and SDN have given us over the past couple of years.
- Fundamentally, 5G gives you the ability to get much larger bandwidth closer to your user.

5G Speed

- 5G will meet the new demands being placed on networks with up to 20x faster data speeds, by some predictions, and nearly 50x latency
- New prediction to made it over 100x4G
- It is improvements in latency that hold much of the promise for Internet of Things (IoT) and Artificial Intelligence (AI) apps.

Projects Related to SMART Architecture

As mentioned above there are a lot projects you can do within SMART architectures like the followings:

- Smart Buildings & Homes
- Industry 4.0
- Smart wastage system
- Smart sewerage System
- Smart lighting
- Smart grids
- Smart parking systems
- Smart health care
- Smart transportation
- Smart Roads
- Smart Traffic Management
- Smart Governance
- Smart Security systems

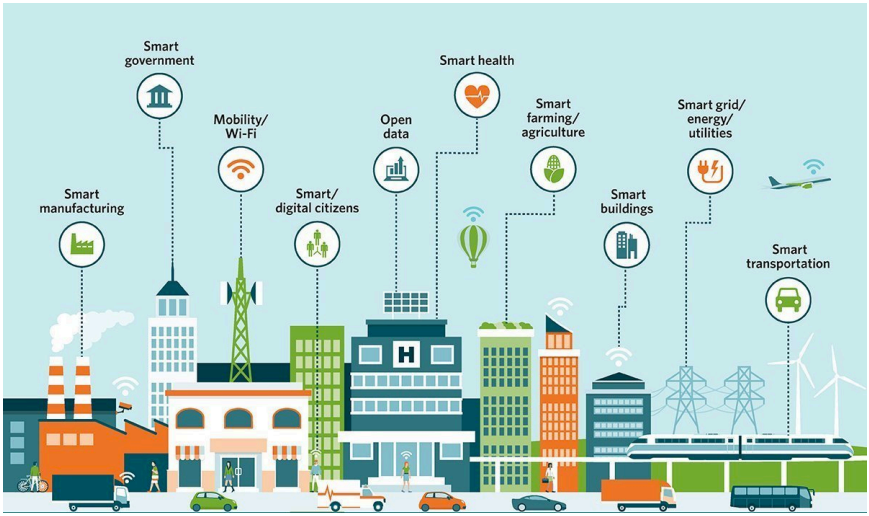
- Smart Response systems
- Smart Education systems
- Smart Factories
- Smart Energy Systems / devices
- Smart liveability
- Smart Devices & Things

Components of the SMART City

In the approach to the Smart Cities Mission, the objective is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions. Following are core elements for the Smart City infrastructure:

- Smart Housing system with affordability
- Robust Connectivity

- Good Governance with Digitlization and Citizen Involvement



- Sustainable Environment
- Safety & Security
- Health for all Facilities
- Education for all Facilities
- Adequate Water Supply
- Assured Electricity
- Sanitation with Solid Waste Management System
- Efficient Mobility & Transportation

Top Smart Cities in the world

New York City

With a population sitting above 8.5 million, New York City uses 1 billion gallons of water each day. As part of its smart city plan, the city's Department of Environmental Protection is deploying a large-scale Automated Meter Reading (AMR) system to get a better snapshot of water consumption, while giving customers a useful tool to check their water use each day. The city has also turned to Bigbelly solar powered "smart" bins which monitor trash levels and ensures waste pick-up is scheduled regularly.

London

The city is the capital and most populous city in the United Kingdom and is a nerve centre in areas such as the arts, commerce, education, entertainment, fashion, finance, media, research, tourism, and transportation. The report underlined London as the city best placed when it comes to human capital, and it was also recognised for its mobility and transportation, international outreach, economy, governance, technology and urban planning.

Paris

The reports shone a spotlight on the city's efforts in international outreach as well as mobility and transportation. For instance, the city is currently in the midst of developing the Grand Paris Express which will

feature 127 miles of fully-automated metro lines and 68 new stations. By 2050, the city will also replace the entire 4,500-bus fleet of the RATP (the Paris Region's primary public transport operator) with electric or natural gas vehicles (NGVs).

Tokyo

As one of the most popular metropolitan areas in the world with a high rate of labour productivity, the city particularly stood out in the ranking for its economy and human capital. Set to host the Olympic Games in 2020, Tokyo will use face recognition technology to improve security whilst driverless taxis are expected to ferry athletes and tourists from place to place.

Singapore

As part of its smart efforts, the city implemented a transportation system called One Monitoring, a comprehensive portal whereby citizens can access traffic information collected from surveillance cameras installed on roads and taxi vehicles using GPS. Additionally, Singapore has also implemented a Parking Guidance System which provides drivers with real-time information on parking availability. In 2015, the city also introduced smart bins as part of a smart waste management programme.

Smartest City in the World

Dubai is the smartest city in the world, as they are adopting all the new technologies and try to change the world with technologies.

Dubai is also called:

- Smart City
- Blockchain City
- AI City

Dubai is the only country in the world which have the ministry dedicated to Artificial Intelligence.

About Author & Trainer

Ahmad Manzoor
(Founder & CEO Pakistan Blockchain Institute)
(Founder & Chief Consultant AnZ Technologies)
(Digital Transformation Consultant)
(Smart Cities Architect)
(Blockchain Solutions Architects)
(Blockchain Security Advisor)

- 20 years of experience in ICT Solutions Architecture & Pre-Sales Field
- Design many solutions for clients within Pakistan & Out of Pakistan mostly EMEA & Europe Region
- Provided Training since last 12 years Nationally & Internationally
- Cisco, Juniper, IBM, Oracle, Intel, EPI, BCS, etc. Certified
- Blockchain Certified in Blockchain Training Alliance & Linux Foundation, Consensys, Blockchain Council, EmergingED like CBBF, CBSA, CBSP etc.
- Certified Blockchain Trainer by Blockchain Training Alliance
- Also Lead Blockchain Trainer in Presidential Initiative for AI & Computing (PIAIC) Program
- Volunteer for COVID-19 Initiative over Blockchain
- Blockchain Advisor for Blockchain Center of Pakistan

Linkedin Profile
https://www.linkedin.com/in/ahmadmanzoorahmad

Facebook Profile
https://www.facebook.com/ahmad.manzoor.9

Youtube Channel
https://www.youtube.com/c/pakistanblockchaininstitute

Personal Youtube Channel
http://www.youtube.com/c/BeAwesomebelievethat